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Pharmacy Newsletter provides information regarding the decisions of P & TC, current concepts in drug therapy, warnings and cautions issued by various regulatory agencies, drug interactions, ADRs and matters related to drug usage.

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Inside this Issue:

Role of Pharmacist During the COVID-19 Pandemic

In December 2019, a respiratory illness due to a novel coronavirus, SARS-CoV-2, was first identified in China. The respiratory illness due to SARS-CoV-2, termed COVID-19, is now a worldwide pandemic and has been identified in more than 200 countries and almost one million people. Common symptoms of COVID-19 include cough, shortness of breath, and fever; disease ranges in severity from asymptomatic infection, mild disease (in 81% of patients), to pneumonia, respiratory failure, and death.

The inability to test widely and quickly has hindered the ability to characterize the epidemiology of the disease, prevent further spread, and ensure the optimal use of other limited resources such as personal protective equipment (PPE) and medication therapy. Pharmacists play an essential and unique role within the healthcare team to optimize patient care during this COVID-19 pandemic.

Antiviral stewardship is vital during the pandemic. In lieu of antivirals with established efficacy for COVID-19, novel experimental agents are currently being evaluated in controlled studies globally for the prophylaxis and treatment of COVID-19. Naturally, pharmacists are essential in facilitating investigational drug studies in health systems but they are also integral to helping obtain medication through compassionate use protocols. While investigational drug pharmacists play a significant role here, active involvement of those practicing in infectious diseases, information technology, critical care, distribution, and management can streamline the process and speed the time to therapy for study patients.

While no agents are currently FDA-approved for treatment of COVID-19, a number of drugs approved for other indications are of great interest for repurposing for COVID-19 treatment, such as lopinavir/ritonavir, chloroquine, and hydroxychloroquine; or may be immune-modulating agents, such as tocilizumab or interferons. If these agents are used, it is the pharmacist's role to provide accurate data to the providers about safe drug delivery (eg, how to formulate oral drugs when patients cannot swallow), drug-drug interactions, and adverse effects. Patients also need appropriate counseling about their use and potential harms, especially if use in the community becomes widespread.

One of the fundamental role of pharmacist is to ensure the availability and timely provision of the safest and most effective therapy. In this role,

pharmacists must plan for, identify and mitigate drug shortages during the COVID-19 pandemic. This is crucial given that drug shortages can lead to prescribing of suboptimal therapy and have been associated with patient harm. When there are limited suppliers of raw materials or active pharmaceutical ingredients (API), drug shortages easily occur. Therefore, pharmacists must work pro-actively to identify effective therapeutic alternatives, enforce the implementation of drug shortage mitigation strategies, and if needed, prioritize drug supply to the patients who are most likely to benefit. Examples of safe usage, formulary restriction for COVID-19 therapies that are in limited supply (ie, hydroxychloroquine) have educated providers about the restrictions, and have implemented electronic alerts to prescribers upon ordering.

Pharmacists can take steps to minimize unnecessary PPE use by helping limit unnecessary entry into the patient room. This can be done by aligning medication administration times, IV to PO switching when possible to decrease nurses needing to respond to pump alerts, and ensuring lab draws, including therapeutic drug monitoring are necessary and if possible are timed with other patient interactions. We can also limit staff to aerosolized exposure of the virus by developing treatment protocols that limit unnecessary nebulizer use and instead favor use of metered dose inhalers for inpatients. Furthermore, medication teaching of patients who are COVID-19-positive or persons under investigation for COVID-19 can be facilitated by telehealth approaches to minimize exposure to pharmacists.

Lastly, pharmacists are a trusted and accessible resource for the public during this public health emergency, especially community pharmacists. Pharmacists must educate their patients and the public on effective strategies to prevent acquisition and further spread of infection (eg, optimal hand hygiene, social distancing, staying home if having respiratory symptoms), symptomatic relief, and the best resources for current COVID-19 information.

In conclusion, the genesis of the COVID-19 pandemic occurred less than 4 months ago, our knowledge about the disease is changing daily, and it is uncertain how long the pandemic will last. Pharmacists play a key role as the drug information expert in evaluating literature related to new or repurposed therapies and can help make system-level and patient-specific treatment decisions, as well as ensure access to these therapies and other drugs on shortage due the pandemic.

References:

- *National Institutes of Health U.S. National Library of Medicine. Adaptive COVID-19 Treatment Trial*
- *Martinez MA. Compounds with therapeutic potential against novel respiratory 2019 coronavirus. Antimicrob Agents Chemother. 2020.*
- *accpjournals.onlinelibrary*

ASK AWAY

You may get an experts opinion by consulting with one of our specialist. Send in your questions at drug.information@aku.edu

OUR PANEL:

Clinical Pharmacy Specialists

Stewardship of Off-Label Treatments for COVID-19| An Evidence Based Practice

The COVID-19 pandemic has become a public health emergency. While researchers are working to find a treatment for the infection, no medication is currently approved by any international regulators like USFDA to treat COVID-19. Some already approved medications for other indications are being tried as off-label treatments of COVID-19.

The Pharmacy & Therapeutics Committee (P&TC) in line with current international literature suggested some recommendations as a general guide for prescribers and pharmacists when considering the appropriate use of experimental treatments. These especially include Azithromycin, Chloroquine, and Hydroxychloroquine, and oseltamivir.

Recommendation 1: Any prescription or medication order for a drug that is also being investigated for the off-label treatment of COVID-19 should be reviewed for appropriateness.

1. *Patients who are already prescribed these medications for non-COVID-19 indications should continue to have access through new prescriptions or refills of existing prescriptions.*

2. *Outpatient prescriptions for these medications should include a documented diagnosis from the prescriber with the FDA-approved indication or other literature-supported, off-label use.*

3. *Pharmacists should verify new prescriptions for these medications are appropriate, recognizing that patients newly diagnosed with conditions like rheumatoid arthritis or lupus may be initiating treatment during the coming weeks or months.*

Recommendation 2: Prescriptions or medication orders for the off-label treatment of confirmed COVID-19 patients should be prioritized for inpatient use and limited in duration of treatment.

1. *Decisions to use off-label medications to treat confirmed COVID-19 patients should be made by the interprofessional team after weighing supporting evidence, risks, and potential benefits.*

2. *Informed consent describing the existing evidence, risks, and potential benefits should be established between providers and patients, caregivers.*

3. *If patients initiated on treatment during inpatient admission must continue treatment upon discharge, prescriptions should be coordinated through direct communication with an outpatient pharmacy.*

4. *Outpatient prescriptions should be dispensed only:*

    a. *In coordination with discharge planning from an inpatient setting for continuity of care, or*
    b. *For patients with a confirmed positive test for SARS-CoV-2.*
    c. *Outpatient prescriptions should be limited to no more than a fourteen-day supply.*
    d. *Refills should not be permitted.*

Recommendation 3: Inventory of drugs being studied for the treatment of COVID-19 should be maintained responsibly.

1. *Pharmacies, especially outpatient pharmacies, should not attempt to buy up and hoard inventories that will be most appropriately used in inpatient settings.*

2. *These medications should be stored with limited access.*

For details of treatment options under research is available on Page 4 & 5

Assessment of Evidence for COVID-19-Related Treatments

The information contained in this evidence table is emerging and rapidly evolving because of ongoing research and is subject to the professional judgment and interpretation of the practitioner due to the uniqueness of each medical facility's approach to the care of patients with COVID-19 and the needs of individual patients.

Antivirals	Rationale	Trial or clinical experience	Dosage	Comments
Chloroquine Phosphate Hydroxychl oroquine (Anti-malarial)	In vitro activity against some viruses, including coronaviruses. Chloroquine: In vitro activity against SARS-CoV-2 in infected Vero E6 cells reported; some evidence it may block infection in Vero E6 cells exposed to SARSCoV-2. Chloroquine: Active in vitro against SARS-CoV and MERS-CoV. Chloroquine: Active in vitro against SARS-CoV and MERS-CoV. Hydroxychloroquine: In vitro activity against SARSCoV-2 reported; additional study needed, but may be more potent than chloroquine in vitro 8 Both drugs have immunomodulatory activity that theoretically could contribute to an antiinflammatory response in patients with viral infections. Known pharmacokinetics and toxicity profile.	Only limited clinical trial data available to date to support use of chloroquine or hydroxychloroquine for treatment or prevention of COVID-19 Multiple clinical trials initiated using various dosages in pts with COVID-19 in China and other countries. Clinical experience in pts with COVID-19 accumulating; reports of possible clinical benefits, including decrease in viral load and duration of illness; only limited data available to date to support efficacy and identify possible safety concerns in pts with COVID-19.	Various dosages recommended or being investigated. Oral chloroquine phosphate: 500 mg twice daily for 10 days Oral chloroquine phosphate: 500 mg twice daily for 7 days (adults 18-65 years weighing >50 kg); 500 mg twice daily on days 1 and 2, then 500 mg once daily on days 3-7 (adults weighing <50kg). Oral chloroquine phosphate: Initial dose of 600 mg (of chloroquine) followed by 300 mg (of chloroquine) 12 hours later on day 1, then 300 mg (of chloroquine) twice daily on days 2 to 5. Consider: 500 mg of chloroquine phosphate is equivalent to 300 mg of chloroquine base Oral hydroxychloroquine: 400 mg twice daily on day 1, then 200 mg twice daily on days 2 to 5. Oral hydroxychloroquine: 400 mg daily for 5 days Oral hydroxychloroquine: 100-200 mg twice daily for 5-14 days Oral hydroxychloroquine: 200 mg 3 times daily for 10 days	Efficacy of chloroquine or hydroxychloroquine for treatment or prevention of COVID-19 not established. Additional data needed to determine whether in vitro activity against SARSCoV-2 corresponds with clinical efficacy for treatment or prevention of COVID19. Additional data needed to substantiate initial reports of efficacy and identify optimal dose and duration. Chloroquine and hydroxychloroquine are suggested as possible options and are included in some guidelines for treatment of COVID-19

ASHP-Guidelines on Off-Labelled Treatments for COVID-19

Antivirals	Rationale	Trial or clinical experience	Dosage	Comments
Oseltamivir	Antivirals active against influenza viruses	In a retrospective case series of 99 patients with COVID-19 at single center in Wuhan from 1/1/20 to 1/20/20, 76% of patients received antiviral treatment, including oseltamivir (75 mg orally every 12 hours). At the time of evaluation, 58% of patients remained hospitalized, 31% had been discharged, and 11% had died. While oseltamivir is noted to have been widely used for confirmed or suspected COVID-19 cases in hospitals in China, there has been no exact evidence to date that oseltamivir is effective in the treatment of COVID-19. Neither oseltamivir nor zanamivir has demonstrated inhibition of cytopathic effect against SARS-CoV in in vitro cell culture.	Dosage of oseltamivir in the case series of 99 patients was 75 mg orally every 12 hours. Dosages of oseltamivir from registered trials (either recruiting, or not yet recruiting) vary, but include 300 mg orally daily, 75 mg orally once or twice daily, and 4–6 mg/kg orally (frequency not specified).	No data to date support use in the treatment of COVID-19.

ASHP-Guidelines on Off-Labelled Treatments for COVID-19

Drug Interaction Update

Hafsah Ashfaq, Clinical Pharmacist

Hydroxychloroquine (HCQ) and Chloroquine are the antimalarial agents and has a new emerging role in treatment of COVID-19 Pneumonia (Off-label). There is a French study showing the combination of HCQ and azithromycin to prevent bacterial Super infections. Despite its small sample size the survey shows that hydroxychloroquine treatment is significantly associated with viral load reduction/disappearance in COVID-19 patients and its effect is reinforced by azithromycin. Both these drugs are associated with significant adverse effects, hepatotxicity and risk of sudden death, especially **when used with Azithromycin may enhance the overall QTc prolongation.** So it is recommended **use with caution and monitoring.** Additionally, elderly patients with other serious underlying diseases, who are already vulnerable to complications from COVID-19 infection, may be at higher risk for cardiac and hepatic side effects from these agents.

For details visit ;
Gautret et al. (2020) Hydroxychloroquine and azithromycin as a treatment of COVID-19: results of an open-label non-randomized clinical trial. International Journal of Antimicrobial Agents – In Press 17 March 2020 – DOI : 10.1016/j.ijantimicag.2020.105949

ToxTalk | Bleach Ingestion

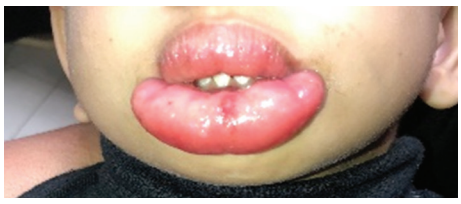
Faqeeha Shakeel, Pharmacist

Household poisons are substances in your home that can cause harm when swallowed, ingested, inhaled or touched. They include cleaning products, detergents, medicines and other common household products. Poisoning occurs most often in toddlers when children are exploring things at home. It's usually common in children less than 5 years of age.

In Pakistan, there are hoards of chemicals and cleaning agents available in the market in polythene bags and unlabelled containers that leads to the poisoning of such chemicals in the children. Most household bleach solutions contain 3% to 5% hypochlorite. Below mentioned is one of the case that Drug & Poison Information Centre (DPIC) Pharmacist dealt with.

Call at Drug & Poison Information Center.

A Physician from a local Hospital called at Drug & Poison Information Centre (DPIC) – AKUH for the management of a poisoning case where a child chewed household bleach containing polythene bag.



According to her the Patient was vitally stable but unable to talk and open his mouth because of swelling on lips and mouth. They have given single dose of Inj. Pheniramine and Inj. Hydrocortisone. But not observed much improvement. Our DPIC Pharmacist, advice physician to dilute with small amounts of milk or water. Activated charcoal is CONTRAINDICATED. Local application of anesthehic agent (Lidocaine 2%) on the lips and around the mouth with a cotton is advised and continue with the injections of antihistamine, Pheniramine.

Followup :

Our DPIC Pharmacist as a regular practice has taken the followup. As per the Physician, the patient symptoms remarkably reduced and swelling returned to normal.

Tips to Prevent Household Poisoning- Keep Child Safe.

- Store chemicals and cleaners out of sight and reach of children at all times.
- Don't keep the chemicals into used juice or soft drink bottles.
- Put all chemicals and cleaners away immediately after finishing the use.
- Safe disposal of chemicals when used is necessary.
- Never put cocroach powders or rat poison on the floors of your home. Do not use insect sprays on furniture or mattresses.
- Keep laundry and dishwasher supplies out of sight and in a locked cabinet.

References:
Micromedex – Toxicology
Pediatric toxicology; a publication of NPIS London.

If you think your child has swallowed something poisonous, call the Drug & Poisons Information Centre on 021-34861504/1506 immediately.

COVID-19- Recommended Practices.

The virus appears to require close contact for human-to-human transmission (i.e., within 6 feet) and primarily spreads via droplets released when someone sneezes or coughs.

Take steps to protect yourself

Clean your hands often

- ✓ Wash your hands with soap and water for at least 20 seconds frequently especially after you have been in a public place, or after blowing your nose, coughing, or sneezing.
- ✓ If soap and water are not readily available, use a hand sanitizer that contains at least 60% alcohol. Cover all surfaces of your hands and rub them together until they feel dry.
- ✓ Cough or Sneeze into your Sleeve.
- ✓ Avoid touching your eyes, nose, and mouth with unwashed hands.
- ✓ Immediately discard used tissues.

Practice social distancing,

- ✓ Walk apart from one another.
- ✓ Avoid close contact with people who are sick.
- ✓ Avoid hand shake.
- ✓ Be aware of where you place your hands and body.

Drug Induced Nutrient & Vitamin Deficiency

Bilal Ahmad- Pharmacist

Introduction: Therapy optimization and reducing drug related harms is a critical and in-depth process to improve patient safety and health quality. The pharmacist reviews the medication order for appropriateness to rule out and minimize drug-drug and drug-food interactions, which lead to nutrients depletion-vital for physiological functions. Drug utilization review is an optimal approach in community setting to identify address and intervene the issue. The topic will highlight the major contributing medications lead to deficiency.

Common Drug-Nutrient Depletions

Nutrient Depletion	Causative Medications
Calcium	Anticonvulsants (e.g., phenytoin, carbamazepine)
	Corticosteroids
	H_2RAs
	Loop diuretics
Coenzyme Q10	Hydralazine
Folic acid	Anticonvulsants (e.g., phenytoin, carbamazepine)
	Estrogens (oral contraceptives)
	Pancreatic enzymes
Magnesium	Estrogens (oral contraceptives)
	H_2RAs
	Loop diuretics
	PPIs
	Thiazide diuretics
Potassium	Corticosteroids
	Loop diuretics
	Thiazide diuretics
Thiamine	Loop diuretics
	Thiazide diuretics
Vitamin A	Bile acid sequestrants
Vitamin B_{12}	Metformin
	H_2RAs
	PPIs
Vitamin D	Anticonvulsants (e.g., phenytoin, phenobarbital, carbamazepine)
	Bile acid sequestrants
	H_2RAs
Vitamin K	Bile acid sequestrants
Zinc	H_2RAs
	Loop diuretics
	Thiazide diuretics

Nutrient	Formulary Supplements
Calcium	Syrup. Calcium carbonate Qalsan-D, Chewcal, CAC1000 & Boncal plus.
Coenzyme Q10	Tab 30mg
Folic Acid	Tab. Folic Acid 5mg
Magnesium	Syp. Magnesium Chloride Inj. Magnesium Sulphate
Vitamin B6	Tab. Vita-6 50mg
Thiamine	Tab & Inj. Neurobion (Vit B1, B6 and B12)
Potassium	Tab. Neo-K 500mg (6.7mEq) Syp. Potassium chloride 13.33mEq/5ml Inj. Potassium chloride (1mEq/ml)
Vitamin A	Cap. 10,000, 100,000 and 200,000 units Syp. 5000/5ml, Drops. 2666IU/drop Tab. 2500 IU
Vitamin B12	Methycobal® Tab & Inj 500 mcg
Vitamin K	Tab & inj 10mg
Vitamin D	Capsules (50k & 2lac, tablets (2000IU), Drops 400IU and Injection (2 &6 lac).
Zinc	Syp 20mg/5ml 110 & 220mg Cap (compounded)

Recommendations for pharmacists:

- Pharmacist is required to review the order and identify the risk factors for nutrient depletion.
- Underlying deficiency need to be evaluated for primary reasons.
- To minimize the drug-food interaction, suggest gap between food and dose to be taken.
- To evaluate the need for replacement, or can be overcome by diet.
- Serum levels should be suggested before therapeutic replacement.
- Counsel the patient, about the ways to minimize risk factors.

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